

A preliminary account of the avifauna of Kahe II Forest Reserve, Tanzania

Norbert J. Cordeiro, Thomas Lehmberg and Jacob Kiure

Birds were surveyed by all authors in Kahe II Forest Reserve (FR) about 20 km to the south of Moshi (37°27'E, 03°28'S), Tanzania, from 16–18 August 1993. NJC also visited this forest reserve on 27 July and 18 August 1994. Methods used were mist-netting and direct observation. Kahe II FR, located at 660 m a.s.l., covers an area of 202 ha and is an extension of the larger Kahe I FR which is 885 ha (S.S. Kashenge, pers. comm.). This note presents recent ornithological results from Kahe II FR, including species of interest and a species list. It is also imperative to note that these forest reserves probably serve as an important refuge for the rarely encountered Banded Snake Eagle *Circaetus cinerascens* and harbour a Marabou Stork *Leptoptilos crumeniferus* nesting colony, being one of the few known sites in Tanzania (Baker 1989). In addition, some highland birds may also use and need these forests in the cold season.

Background and brief description of study areas

The Kahe area appears to have received some ornithological attention by explorers visiting Mt Kilimanjaro in the late 1800s and early 1900s. Several people collected birds at “Kahe” although specific information on the habitat was seldom mentioned. Notable collectors include W. L. Abbott (Oberholser 1905), G. A. Fischer, F. J. Jackson, O. Neumann, C. G. Schillings and Y. Sjöstedt (reviewed in Sjöstedt (1910)). R. E. Moreau also collected at Kahe (Moreau & Moreau 1937). Recent avifaunal studies on this forest seem lacking.

This dry forest is mainly riverine and contains fairly large old *Ficus* trees, some reaching girths of over 2 m. The bulk of it is secondary in nature, a result of extensive past and current human activities which include logging, charcoal burning and fuelwood and pole collecting. It is surrounded by several small village communities whose residents use the forest for the above-mentioned reasons. There has also been some degree of encroachment on the reserve by these communities who farm maize, beans, cassava, bananas, millet and rice. The Rau River, which once used to meander through this reserve, was rechannelled by NAFCO for irrigation purposes in the area during the 1960s (J.S. Msangi, pers. comm.).

Methods

Mist nets were used to sample the understorey species that may have been overlooked because of their inconspicuous nature. Two netting sites were set up in reasonably dense undergrowth along a dry river bed at the north end of the forest. Ten nets were operated from dawn to dusk and birds were removed every half hour or hour depending on the capture rates. Birds were fitted with Eastern African Ringing Scheme rings and standard biometric measurements were taken. The moult and brood patch scores were also noted.

Direct observation and the recording of bird calls was also employed in the field for

species at all levels of the forest. TL surveyed the forest by field observation during the day whereas NJC and JK alternatively switched between mist-netting and direct observation after every 2–3 h.

Results

Mist-netting

A total of 37 birds comprising 12 species were ringed in 3045 net-metre-hours of surveillance (Table 1). The Olive Grey Greenbul *Phyllastrephus cerviniventris* was the most abundant understorey species. Breeding records of some species were opportunistically obtained. Large brood patches of 4 and 5 indicate probable breeding, whereas similar scores with scaly or refeathering breasts suggest that the bird had completed sitting on eggs (Baker 1993). Of those ringed, seven had recently nested whereas five were probably incubating or rearing fledglings (Table 1).

Table 1. *Numbers of birds ringed by species and individuals indicating current or recent breeding activity*

Species	No. ringed	Brood patch of 4, 5
Zanzibar Sombre Greenbul <i>Andropadus importunus</i>	1	4
Little Greenbul <i>A. virens</i>	1	
Olive Grey Greenbul <i>Phyllastrephus cerviniventris</i>	10	
Northern Brownbul <i>P. strepitans</i>	2	4s, 5s
Red-capped Robin Chat <i>Cossypha natalensis</i>	5	
White-starred Forest Robin <i>Pogonocichla stellata</i>	4	
Grey-backed Camaroptera <i>Camaroptera brachyura</i>	1	4
Crested Flycatcher <i>Trochocercus cyanomelas</i>	2	4, 5
Paradise Flycatcher <i>Terpsiphone viridis</i>	1	
Olive Sunbird <i>Nectarinia olivacea</i>	4	5
Grosbeak Weaver <i>Amblyospiza albifrons</i>	2	4s, 5s
Peters' Twinspot <i>Hypargos niveoguttatus</i>	4	4, 5, 4rf

Note: Under brood patch, an "s" = scaly and "rf" = refeathering, both indications of recent breeding activity.

Forest Reserve records

The following section is divided into an annotated list of species of interest, followed by a table of all the species recorded in or at the edge of the reserve. The following species are of interest because of their range extensions in Tanzania or the limited knowledge that is available on their behaviour.

Marabou Storks *Leptoptilos crumeniferus*

Very few breeding sites of this stork are known from East Africa (Baker 1989). Baker (1989) notes a breeding population in Moshi and asked for further information on breeding colonies in an effort to promote its conservation. A small colony probably

still exists in the Rau Groundwater FR (pers. obs. 1986: NJC) at Moshi and another was located at Kahe II FR consisting of at least five nests which are in potential danger from tree-cutting activities.

Banded Snake Eagle *Circaetus cinerascens*

One was possibly seen and another definitely heard in 1993. Another individual was observed at the forest edge on 18 August 1994. This raptor was previously noted from the riverine forests close to Kahe (N. E. Baker, pers. comm.).

Crowned Eagle *Stephanoaetus coronatus*

An occupied nest with at least one chick was located near a dried-up river in the forest in 1993. The nest was situated in the fork of a large, old fig tree at a height of approximately 30–35 m. Adult birds were seen taking prey to the nest: skeletal remains of at least three species of primates and a duiker were collected in 1993 and 1994 and are currently being studied (K. M. Howell *in litt.*). The prey species possibly included the Black and White Colobus *Colobus guereza*, Blue Monkey *Cercopithecus mitis*, a galago and Red Duiker *Cephalophus harveyi*.

On 17 August at about 08:15, Olive Baboons *Papio cynocephalus anubis* were feeding on figs in and below two large fig trees, one of which contained the nest. An adult male baboon fed within 5–10 m of the nest. The baboon was not attacked by the eagle, despite records of such attacks on humans in the past (e.g., Oulton 1938).

Yellowbill *Ceuthmochares aereus*

One was seen skulking in a middle-storey tree. Britton (1980) does not note it from Kahe or the Kilimanjaro hinterland although, in addition to our record, it has been recorded from the area recently (J. M. Grimshaw *in* Cordeiro 1994) and in the past by van Someren. Two female specimens collected in Moshi by van Someren exist in the Field Museum of Natural History, Chicago (pers. obs.: specimen No. 193480, 12 July 1920 and No. 193481, 11 June 1920).

Alpine Swift *Apus melba*

A small flock was seen flying over the forest. Regular parties were seen through most of August in Moshi where heavy clouds on the mountain probably caused them to forage at lower altitudes (850–1500 m).

Greenbuls Pycnonotidae

Andropadus importunus, *A. virens*, *Phyllastrephus cerviniventris* and *P. strepitans* were located at Kahe. *P. strepitans* and *P. cerviniventris* associated in mixed flocks, the latter being more prevalent. *A. importunus* was seen twice and netted once. *A. virens* appeared scarce.

White-starred Forest Robin *Pogonocichla stellata*

Four of the Kilimanjaro race *guttifer* were netted in 1993 and one was seen and heard in July and August 1994, respectively. This species is known to move from high to low elevations during the cold season, which includes the study period, and vice versa during the warm season (Oatley 1982, Dowsett 1985, Dowsett-Lemaire 1989). The

race *guttifer* is only known from Kilimanjaro whereas *helleri* occupies the other closest locality to Kahe, Lossogonoi (Britton 1980). Hence, it is possible that these individuals came down from Mt Kilimanjaro although, at this stage, one cannot rule out that they may represent a resident population.

Lead-coloured Flycatcher *Myioparus plumbeus*

Seen at least three times foraging in pairs, mainly in small glades at the mid-stratum level.

Grosbeak Weaver *Amblyospiza albifrons*

Females were seen feeding on figs or resting in the canopy whereas another two were netted on the ground as they searched for fallen figs.

Table 2. List of birds recorded in or flying over Kahe II FR. Other species recorded by previous workers from "Kahe" are probably from Kahe I or II FRs and are also listed. Nomenclature and systematics follows Britton (1980) and Turner et al. (1991)

Species	Habitat used and other notes
Hamerkop <i>Scopus umbretta</i>	Forest edge (nest with 2 chicks August, 1994)
Marabou Stork <i>Leptoptilos crumeniferus</i>	Forest/woodland (breeding colony)
Hadada <i>Bostrychia hagedash</i>	Forest edge
Palm-nut Vulture <i>Gypohierax angolensis</i>	Flying over forest
African White-backed Vulture <i>Gyps africanus</i>	Forest/woodland
Hooded Vulture <i>Necrosyrtes monachus</i>	Flying over forest
Banded Snake Eagle <i>Circaetus cinerascens</i>	Forest
Little Sparrowhawk <i>Accipiter minullus</i>	Forest edge/woodland
African Goshawk <i>Accipiter tachiro</i>	Forest/woodland
Augur Buzzard <i>Buteo augur</i>	Forest/woodland
African Hawk Eagle <i>Hieraaetus spilogaster</i>	Forest/woodland
Lizard Buzzard <i>Kaupifalco monogrammicus</i>	Forest edge/woodland
Long-crested Eagle <i>Lophaelus occipitalis</i>	Forest/woodland
Crowned Eagle <i>Stephanoaetus coronatus</i>	Forest
Crested Guineafowl <i>Guttera pucherani</i>	Forest (feathers found in 1993 and 1994)
Tambourine Dove <i>Turtur tympanistria</i>	Forest/woodland
Red-eyed Dove <i>Streptopelia semitorquata</i>	Forest edge/woodland
African Green Pigeon <i>Treron calva</i>	Forest/forest edge
Klaas' Cuckoo <i>Chrysococcyx klaas</i>	Forest/woodland
Red-chested Cuckoo <i>Cuculus solitarius</i>	Forest/woodland
Yellowbill <i>Ceuthmochares aereus</i>	Forest
White-browed Coucal <i>Centropus superciliosus</i>	Forest/woodland
African Wood Owl <i>Strix woodfordii</i>	Forest
Alpine Swift <i>Apus melba</i>	Forest/woodland (flying over)
Palm Swift <i>Cypsiurus parvus</i>	Forest/woodland (flying over)
Bar-tailed Trogon <i>Apaloderma vittatum</i>	collected by Hunter (in Sjöstedt 1910)

Species	Habitat used and other notes
Pygmy Kingfisher <i>Ispidina picta</i>	Forest edge/woodland
Brown-hooded Kingfisher <i>Halcyon albiventris</i>	Forest/woodland
Green Wood Hoopoe <i>Phoeniculus purpureus</i>	Forest
Silvery-cheeked Hornbill <i>Bycanistes brevis</i>	Forest
Trumpeter Hornbill <i>B. bucinator</i>	Forest
Crowned Hornbill <i>Tockus alboterminatus</i>	Forest/woodland
White-eared Barbet <i>Stactolaema leucotis</i>	Forest/forest edge
Tinkerbird species <i>Pogoniulus</i> sp.	Forest/forest edge
Eastern Honeybird <i>Prodotiscus zambesiae</i>	Forest edge
African Broadbill <i>Smithornis capensis</i>	Collected by Neumann (in Sjöstedt 1910)
Black Rough-wing <i>Psaldoprocne pristoptera</i>	Forest
Black-headed Oriole <i>Oriolus larvatus</i>	Forest/woodland
Zanzibar Sombre Greenbul <i>Andropadus importunus</i>	Forest/forest edge
Little Greenbul <i>A. virens</i>	Forest
Nicator <i>Nicator chloris</i>	Moreau & Moreau (1937)
Grey-olive Greenbul <i>Phyllastrephus cerviniventris</i>	Forest
Northern Brownbul <i>P. strepitans</i>	Forest/woodland
Red-capped Robin Chat <i>Cossypha natalensis</i>	Forest
White-starred Forest Robin <i>Pogonocichla stellata</i>	Forest
Black-headed Apalis <i>Apalis melanocephala</i>	Forest
Grey-backed Camaroptera <i>Camaroptera brachyura</i>	Forest/forest edge
Lead-coloured Flycatcher <i>Myioparus plumbeus</i>	Forest glades
Black-throated Wattle-eye <i>Platysteira peltata</i>	Forest
Paradise Flycatcher <i>Terpsiphone viridis</i>	Forest
Crested Flycatcher <i>Trochocercus cyanomelas</i>	Forest
Black-backed Puffback <i>Dryoscopus cubla</i>	Forest/woodland
Collared Sunbird <i>Anthreptes collaris</i>	Forest/woodland
Amethyst Sunbird <i>Nectarinia amethystina</i>	Forest/woodland
Olive Sunbird <i>N. olivacea</i>	Forest
Yellow White-eye <i>Zosterops senegalensis</i>	Forest/woodland
Grosbeak Weaver <i>Amblyospiza albifrons</i>	Forest/woodland
Peters' Twinspot <i>Hypargos niveoguttatus</i>	Forest
Yellow-rumped Seed-eater <i>Serinus atrogularis</i>	Forest/woodland
African Citril <i>S. citrinelloides</i>	Forest edge/woodland

Non-forest species recorded near Kahe II Forest Reserve

Various species were recorded just outside the forest and within about a 3-km radius of the reserve. Table 2 is a list of all the species that we recorded during our survey and includes those made by earlier collectors that were not recorded by us.

Preliminary conservation notes

The rechannelling of the Rau River may eventually cause the drying of Kahe II FR. The river now flows in a canal outside the forest which probably forces animals to leave the forest in search of water. Since the forest is virtually surrounded by small villages, this probably hinders such movements and may cause some conflict between humans and wild animals.

Table 3. *Systematic list of all non-forest species recorded from the Kahe area during the survey, including other dated records from the literature. An 'x' denotes that a species was recorded at Kahe during the survey*

Species	Recorded in this survey, past records of bird collectors and other notes
Pink-backed Pelican <i>Pelecanus rufescens</i>	Schillings (<i>in</i> Sjöstedt 1910)
Saddle-billed Stork <i>Ephippiorhynchus senegalensis</i>	one in rice paddies near Chekereni, 18 Aug 1993
Black-headed Heron <i>Ardea melanocephala</i>	x
Cattle Egret <i>Bubulcus ibis</i>	x
Little Egret <i>Egretta garzetta</i>	x
Brown Snake Eagle <i>Circaetus cinereus</i>	x
Short-toed Snake Eagle <i>C. gallicus</i>	x
Black Kite <i>Milvus migrans</i>	x
Pygmy Falcon <i>Polihierax semitorquatus</i>	Abbott (<i>in</i> Oberholser 1905)
Vulturine Guinea-fowl <i>Acryllium vulturinum</i>	Jackson & Willoughby (<i>in</i> Sjöstedt 1910)—probably extinct
Button Quail <i>Turnix sylvatica</i>	Abbott (<i>in</i> Oberholser 1905)
Black Crake <i>Amaurornis flavirostra</i>	x
Jacana <i>Actophilornis africanus</i>	x
Blacksmith Plover <i>Vanellus armatus</i>	x
Common Sandpiper <i>Actitis hypoleucos</i>	x
Black-winged Stilt <i>Himantopus himantopus</i>	x
Namaqua Dove <i>Oena capensis</i>	x
Ring-necked Dove <i>Streptopelia capicola</i>	x
Emerald-spotted Wood Dove <i>Turtur chalcospilos</i>	x
Black and White Cuckoo <i>Oxylophus jacobinus</i>	Neumann & Jackson (<i>in</i> Sjöstedt 1910)
Gabon Nightjar <i>Caprimulgus fossii</i>	Abbott (<i>in</i> Oberholser 1905)
Horus Swift <i>Apus horus</i>	Abbott (<i>in</i> Oberholser 1905)
Speckled Mousebird <i>Colius striatus</i>	x
Blue-naped Mousebird <i>Urocolius macrourus</i>	x
Malachite Kingfisher <i>Alcedo cristata</i>	x
Striped Kingfisher <i>Halcyon chelicuti</i>	x
Chestnut-bellied Kingfisher <i>H. leucocephala</i>	x
Little Bee-eater <i>Merops pusillus</i>	x
Lilac-breasted Roller <i>Coracias caudata</i>	x
Ground Hornbill <i>Bucorvus cafer</i>	x
Spotted-flanked Barbet <i>Tricholaema lacrymosa</i>	x
White-headed Barbet <i>Lybius leucocephalus</i>	x
Brown-breasted Barbet <i>L. melanopterus</i>	x
d'Arnaud's Barbet <i>Trachyphonus darnaudii</i>	Neumann (<i>in</i> Sjöstedt 1910)
Black-throated Honeyguide <i>Indicator indicator</i>	x
Cardinal Woodpecker <i>Dendropicos fuscescens</i>	x
Red-capped Lark <i>Calandrella cinerea</i>	x
Fischer's Sparrow Lark <i>Eremopterix leucopareia</i>	x
Pink-breasted Lark <i>Mirafrapa poecilosterna</i>	<i>in</i> Britton (1980)
Flappet Lark <i>M. rufocinnamomea</i>	Schillings (<i>in</i> Sjöstedt 1910)
Striped Swallow <i>Hirundo abyssinica</i>	x
Eurasian Swallow <i>H. rustica</i>	Abbott (<i>in</i> Oberholser 1905)
Wire-tailed Swallow <i>H. smithii</i>	x

Species	Recorded in this survey, past records of bird collectors and other notes
Banded Martin <i>Riparia cincta</i>	x
African Sand Martin <i>R. paludicola</i>	x
Drongo <i>Dicrurus adsimilis</i>	x
White-necked Raven <i>Corvus albicollis</i>	Abbott (in Oberholser 1905)
Pied Crow <i>C. albus</i>	x
Grey Tit <i>Parus afer</i>	x
Rufous Chatterer <i>Turdoides rubiginosus</i>	x
Black Cuckoo Shrike <i>Campephaga flava</i>	Neumann (in Sjöstedt 1910)
Common Bulbul <i>Pycnonotus barbatus</i>	x
Spotted Morning Thrush <i>Cichladusa guttata</i>	x
Yellow-breasted Apalis <i>Apalis flavida</i>	Abbott (in Oberholser 1905)
Rattling Cisticola <i>Cisticola chiniana</i>	Abbott (in Oberholser 1905)
Winding Cisticola <i>C. galactotes</i>	x
Tawny-flanked Prinia <i>Prinia subflava</i>	x
Red-faced Crombec <i>Sylvietta whytii</i>	x
Chin-spot Batis <i>Batis molitor</i>	x
African Pied Wagtail <i>Motacilla aguimp</i>	x
Slate-coloured Boubou <i>Laniarius funebris</i>	Neumann (in Sjöstedt 1910)
White-crowned Shrike <i>Eurocephalus rueppelli</i>	x
Retz's Helmet Shrike <i>Prionops retzii</i>	Abbott (in Oberholser 1905)
Fire-fronted Bishop <i>Euplectes diadematus</i>	in Britton (1980)
Taveta Golden Weaver <i>Ploceus castaneiceps</i>	x
Masked Weaver <i>P. intermedius</i>	x (breeding colony with chicks outside forest, August 1994)
Grey-headed Sparrow <i>Passer griseus</i>	x
Waxbill <i>Estrilda astrild</i>	x
Cut-throat <i>Amadina fasciata</i>	x
Black and White Mannikin <i>Lonchura bicolor</i>	x ssp. <i>nigriceps</i>
Bronze Mannikin <i>L. cucullata</i>	x

In addition, people living around the forest are cutting down large, old trees for timber and building poles. Building poles are obtained from larger trees by splitting the trunks into sections with a wooden wedge and axe. Charcoal production does occur as well, but apparently to a lesser extent. Because of these activities, the forest is of a rather degraded nature. Although these activities were commonly noted in 1993, Kahe forest rangers stated that they have been trying to reduce the level of destruction to the forest reserves (J. S. Msangi, pers. comm. 1994).

The importance of Kahe II FR has been highlighted by the discoveries outlined above. Kahe I FR, however, is the larger of the two reserves and is in need of a biological and conservation investigation. Further efforts through long-term studies should be made to survey the biodiversity and conservation priorities for these two forest reserves.

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Norbert J. Cordeiro, 3145 Canfield Avenue, No. 13, Los Angeles, CA 90034, USA,
 Thomas Lehmborg, Zoological Museum, University of Copenhagen,
 Universitetsparken 15, DK-2100 Copenhagen Ø, Denmark and Jacob Kiure,
 Wildlife Conservation Society of Tanzania, Box 70919, Dar es Salaam, Tanzania

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Corrigenda

In N. J. Cordeiro's paper "Forest birds on Mt Kilimanjaro, Tanzania", *Scopus* 17, the following errata occurred: p. 74, scientific name of Green Tinkerbird should be *Pogoniulus simplex*. On p. 91, first sentence under *Sylviidae* should read: Bar-throated Apalis *Apalis thoracica* and Black-headed Apalis *A. melanocephala* separate vertically: *A. melanocephala* occupied the mid-stratum to canopy level and *A. thoracica* the understorey.